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ABSTRACT

One of the three individualized courses included in a plumbing curriculum, this course focuses on general procedures and practices for building trades and services. The course is comprised of three units: (1) Safety, (2) Hand Tools, and (3) Measurement. Each unit begins with a Unit Learning Experience Guide that gives directions for unit completion. The remainder of each unit consists of Learning Activity Packages (LAP) that provide specific information for completion of a learning activity. Each LAP is comprised of the following parts: objective, evaluation procedure, resources, procedure, supplemental sheets, study guide, and a LAP test with answers. The course is preceded by a pretest which is designed to direct the student to units and performance activities. (LRA)

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ED197186

MOUNTAIN PLAINS LEARNING EXPERIENCE GUIDE:

Plumbing.

Course: General Procedures and Practices for Building Trades and Services.

CE 027 816

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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Mountain-Plains Education & Economic Development Program, Inc.
Glasgow AFB, Montana 59231

Learning Experience Guide

COURSE: GENERAL PROCEDURES AND PRACTICES FOR BUILDING TRADES AND SERVICES

DESCRIPTION:

This course is about: (1) General safety practices and procedures commonly used in the industrial world, (2) general care and use of hand tools, and (3) the care and use of basic precision and non-precision measuring instruments. The general safety practices includes personal safety and shop safety. The unit on general hand tools describes and illustrates the care and use of commonly used hand tools. The measuring instruments section covers the care and use of various precision and non-precision measuring instruments.

RATIONALE:

Since the application of safe practices is essential in an industrial occupation, a student must become familiar with and apply safety in every situation. This course is designed to provide the knowledge about practices needed to apply safety principles. A worker needs to take good care of and make proper use of his hand tools if he is going to produce acceptable products. This course assists the student with the proper care and use of hand and measuring tools.

OBJECTIVES:

Identify the equipment and recognize the practices that are used to protect personnel in the work environment. Identify hand and measuring tools, their functions and procedures for their care and use. Determine the tolerance from specifications and recognize how to apply it in measurement.

PREREQUISITES:

None

RESOURCES:

A resource list is attached.

Principal Author(s): R. Arneson, L. Leland

GENERAL INSTRUCTIONS:

This course has three units. Each unit has a Unit Learning Experience Guide (LEG) that gives directions for unit completion. Each unit consists of Learning Activity Packages (LAPs) that provide specific information for completion of a learning activity. Pretesting results direct the student to units and performance activities.

The general procedure for this course is as follows:

(1) Assigned to a unit in this course.

(2) Read the assigned unit LEG.

(3) Take the unit achievement test and score it. (See unit LEG "Evaluation Procedure")

(4) If the achievement test is satisfactorily completed, proceed to the next assigned unit in this course and step (2).
If the test is not satisfactorily completed, proceed to step (5).

(5) Begin and complete the first assigned LAP in the unit.

(6) Proceed to the next assigned LAP in the unit.

(7) Complete all required LAPs for the unit by following steps (5) through (6) until all LAPs for the unit are completed.

(8) Take the achievement test for the unit. (See unit LEG "Evaluation Procedure")

(9) Proceed to the next assigned unit in this course.

(10) Cycle through steps (2) through (9) until all required units are completed for this course.

(11) Proceed to the next assigned course in the "Plumber" Program.

You will work independently unless directed to do otherwise. When questions or problems arise, you are expected to discuss them with the instructor. At all times remember to follow correct safety procedures during the performance activity.

UNIT TITLES:

.01 Safety
.02 Hand Tools
.03 Measurement

EVALUATION PROCEDURE:

Course evaluation is by pre and post testing using a multiple-choice type of test.

In this course, the course test is used as a pretest to determine which units, if any, the student may be able to validate. The student is considered validated for a particular unit if 4 out of 5 items are correctly answered for each LAP part on the course pretest.

The course test will also be taken by the student as a post test to determine any changes resulting from taking all or part of the course.

FOLLOW-THROUGH:

Go to the first assigned unit Learning Experience Guide (LEG) listed on your Student Progress Record (SPR).

RESOURCE LIST

Printed Materials

1. Basic Measuring Instruments, A Self Instructional Program. Westinghouse Learning Corporation, 1970.
2. Hand Tools, A Self Instructional Program. Westinghouse Learning Corporation, 1970.
3. Shop Safety, A Self Instructional Program. Westinghouse Learning Corporation, 1970.

Audio/Visuals

none

Equipment

none

5/22/75

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COURSE PRETEST: GENERAL PROCEDURES AND PRACTICES FOR BUILDING TRADES AND SERVICES

73.03.01.01

1. Bending the knees and keeping the back straight are two of the steps to be followed when:

   a. lifting a heavy object.
   b. cleaning machinery.
   c. working on equipment.
   d. cleaning the shop.

2. Proper eye safety requires wearing:

   a. sunglasses.
   b. goggles or safety glasses.
   c. a respirator.
   d. a helmet.

3. Why is smoking not allowed in many shop areas?

   a. Because it is harmful to you.
   b. Because it is a health hazard.
   c. Because it may preoccupy you.
   d. Because it is a fire hazard.

4. What should be worn while working around dust particles and dangerous fumes?

   a. A white uniform.
   b. A mask that covers the nose and mouth.
   c. A protective helmet.
   d. A mask and gloves.

5. Why must a belt holster be worn?

   a. To keep tools handy.
   b. To be more organized.
   c. It is a safety regulation.
   d. To keep from losing tools.

73.03.01.02

6. When should unsafe conditions be reported?

   a. Soon after they are noticed.
   b. During a break.
   c. Immediately.
   d. After work.

73.03.01.02 (cont'd)

7. What type of fire extinguisher should be used on an electrical fire?

   a. Carbon dioxide.
   b. Soda water.
   c. Dry chemical.
   d. Water.

8. In what position should rods or other long objects be carried?

   a. At an angle.
   b. Horizontal.
   c. Any position that is comfortable.
   d. Vertical.

9. What makes plexiglass a preferred guard material?

   a. It is lightweight.
   b. It is stronger.
   c. It is cheaper.
   d. It is clear.

10. The sound of a bell or horn around machinery means:

   a. The machine is being started.
   b. There's a fire in the shop.
   c. It is lunch time.
   d. The machine is shutting off.

73.03.02.01

11. The function of the pipe wrench is:

   a. Used on hex head and square head bolts and nuts.
   b. To hold or turn a part when marring of the surface does not affect the part.
   c. Used on odd size bolts and nuts.
   d. Used in set-up and assembly work.

12. The open end wrench is used on what types of bolts?

   a. "Hidden" bolts.
   b. Rivet type bolts.
   c. Bolts that are hard to get at.
   d. Hex head and square head bolts.

13. The definition of a hex head is:

   a. A bolt or nut with six sides.
   b. A bolt or nut with four sides.
   c. A bolt or nut with a round head.
   d. A bolt or nut with a flat head.

73.03.02.01 (cont'd)

14. The box wrench is used only on what type of bolts?

    a. Square head bolts.
    b. Hex head bolts.
    c. Slotted head screws.
    d. Phillips head screws.

15. Why is it important for the wrench to fit snugly on a bolt?

    a. For speed in workmanship.
    b. Because the bolt will become round off.
    c. To prevent injuries by wrench slipping off.
    d. Because the wrench will not function loose.

73.03.02.02

16. There are basically how many types of hammers that a mechanic can use?

    a. 2 types.
    b. 3 types.
    c. 4 types.
    d. 1 type.

17. The soft-faced hammer is used for:

    a. Straightening or forming metal.
    b. Set-up and assembly work.
    c. Peen or rivet.
    d. Pounding out dents.

18. The flat face on a ball peen hammer is used to:

    a. Peen or rivet.
    b. Set-up and assembly work.
    c. Straighten or form metal.
    d. Hammer heavy nails.

19. What weight ball peen hammer is used for bench layout work?

    a. 1½ pound.
    b. Less than 1 pound.
    c. 2 pound.
    d. 2½ pound.

20. The ball peen hammer is used for:

    a. Driving in tacks.
    b. Set-up work.
    c. Assembly work.
    d. Peen or rivet work.

73.03.02.03

21. Before drilling, the center line for a hole location is indented with a:

    a. Drill bit.
    b. Nail.
    c. Center punch.
    d. Pencil.

22. What tool is used to remove metal and produce a finished surface?

    a. File.
    b. Sabre saw.
    c. Hacksaw.
    d. Blade.

23. The teeth on a hacksaw blade slant in what direction?

    a. Down.
    b. Backward.
    c. Up.
    d. Forward.

24. What tool is used to cut and twist wire?

    a. Side cutting pliers.
    b. Long nose pliers.
    c. Jack knife.
    d. Pinchers.

25. To make a very accurate and smooth hole what tool must be used?

    a. Reamer.
    b. Drill.
    c. Oversized drill.
    d. Brace and bit.

73.03.03.01

26. Linear measurement is a measure of:

    a. Angles.
    b. Degrees.
    c. Fractions.
    d. Length.

27. Angular measurement is a measure of:

    a. Length.
    b. Angles.
    c. Degrees.
    d. Fractions.

73.03.03.01 (cont'd)

28. An allowable variation in size is called:

    a. Fraction.
    b. Decimal.
    c. Tolerance.
    d. Degrees.

29. How are precision tolerances stated?

    a. In angles.
    b. In fractions.
    c. In degrees.
    d. In decimals.

30. How are nonprecision tolerances stated?

    a. In angles.
    b. In decimals.
    c. In degrees.
    d. In fractions.

73.03.03.02

31. What is the function of a protractor?

    a. To find the center.
    b. To measure length.
    c. To transfer measurements.
    d. To measure angles.

32. What is the function of a rule depth gage?

    a. To measure the circumference.
    b. To measure depth of holes and slots.
    c. To measure length.
    d. To measure angles.

33. What is the difference between a steel rule and a steel tape?

    a. A steel rule has a larger case.
    b. A steel tape is longer than a steel rule.
    c. A steel rule is used to measure larger dimensions.
    d. A steel case is 3" long.

34. Which tool below transfers measurements?

    a. Protractor.
    b. Steel tape.
    c. Divider.
    d. Square head.

73.03.03.02 (cont'd)

35. Which measuring device below is used to find the center of round or square bars?

    a. Square head and blade.
    b. Protractor.
    c. Outside calipers.
    d. Center head and blade.

73.03.03.03

36. The vernier scale allows you to measure in:

    a. Hundreds of an inch.
    b. Ten-thousandths of an inch.
    c. Thousandths of an inch.
    d. Thens of an inch.

37. What measuring device is used to determine the clearance between two surfaces?

    a. Steel square.
    b. Feeler blades.
    c. Vernier caliper.
    d. Micrometer depth gage.

38. What measuring device measures outside dimensions only?

    a. Vernier caliper.
    b. Micrometer.
    c. Micrometer depth gage.
    d. Dial indicator.

39. Which measuring device measures concentricity and parallelism?

    a. Feeler gages.
    b. Dial indicator.
    c. Micrometer.
    d. Inside micrometer.

40. What does each mark on the thimble of the inside micrometer indicate?

    a. 0.001".
    b. 0.025".
    c. 0.100".
    d. 0.010".

COURSE PRETEST ANSWER KEY

Occupational Area:
File Code: 73.03.00.00.A2-2
Name:

ANSWERS

73.03.01.01	1. A		73.03.02.03	21. C		41.	
	2. B			22. A		42.	
	3. D			23. D		43.	
	4. B			24. A		44.	
	5. C			25. A		45.	
73.03.01.02	6. C		73.03.03.01	26. D		46.	
	7. C			27. B		47.	
	8. D			28. C		48.	
	9. D			29. D		49.	
	10. A			30. D		50.	
73.03.02.01	11. B		73.03.03.02	31. D		51.	
	12. D			32. B		52.	
	13. A			33. E		53.	
	14. B			34. C		54.	
	15. C			35. D		55.	
73.03.02.02	16. A		73.03.03.03	36. B		56.	
	17. B			37. B		57.	
	18. C			38. B		58.	
	19. B			39. B		59.	
	20. D			40. A		60.	

COURSE POST TEST ANSWER KEY

Occupational Area: _____
File Code: 73.03.00.00.A2-2
Name: _____

ANSWERS

73.03.01.01	1. A		73.03.02.03	21. C		41.	
	2. B			22. A		42.	
	3. D			23. D		43.	
	4. B			24. A		44.	
	5. C			25. A		45.	
73.03.01.02	6. C		73.03.03.01	26. D		46.	
	7. C			27. B		47.	
	8. D			28. C		48.	
	9. D			29. D		49.	
	10. A			30. D		50.	
73.03.02.01	11. B		73.03.03.02	31. D		51.	
	12. D			32. B		52.	
	13. A			33. B		53.	
	14. B			34. C		54.	
	15. C			35. D		55.	
73.03.02.02	16. A		73.03.03.03	36. B		56.	
	17. B			37. B		57.	
	18. C			38. B		58	
	19. B			39. B		59	
	20. D			40. A		60	

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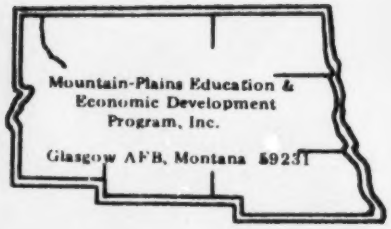

Learning Experience Guide

UNIT: SAFETY

RATIONALE:

Following safety practices and procedures is essential to any worker. Employers are very concerned about accidents. Therefore, a worker needs to familiarize himself with safe practices and procedures. This unit will provide general information on this topic.

PREREQUISITES:

None

OBJECTIVES:

Identify personal and work environment equipment, techniques and procedures that insure greatest protection for people.

RESOURCES:

Shop Safety, A Self Instructional Program. Westinghouse Learning Corporation, 1970.

GENERAL INSTRUCTIONS:

This Unit consists of two Learning Activity Packages (LAPs). Each LAP will provide specific information for completion of a learning activity.

The general procedure for this Unit is as follows:

(1) Take the unit achievement test and score it. (See unit LEG "Evaluation Procedure")

(2) If the achievement test is satisfactorily completed, proceed to the next assigned unit in this course and step (1).

If the test is not satisfactorily completed, proceed to step (3).

(3) Begin and complete the first assigned LAP in the unit.

(4) Proceed to the next assigned LAP in the unit.

(5) Complete all required LAPs for the unit by following steps (3) through (4) until all LAPs for the unit are completed.

(6) Take the achievement test for the unit. (See unit LEG "Evaluation Procedure")

GENERAL INSTRUCTIONS: continued

Although this unit deals with knowing about safety practices and procedures, you will be required to demonstrate these procedures all during your program here and, hopefully, whenever you are working.

PERFORMANCE ACTIVITIES:

.01 Personal Safety
.02 Safety in the Work Environment

EVALUATION PROCEDURE:

The student validates this unit by either pretesting or post testing. An "Achievement Test" for this unit is to be taken when pretesting or post testing.

The achievement test is a written test. Successful completion is answering at least 80% of the items correctly.

FOLLOW-THROUGH:

Remember, you will be required to demonstrate safe practices and procedures in all your activities.

In the "Plumber" Program unit performance tests, one of the evaluation steps will be to follow safe practices and procedures.

After reading this guide take the Unit Pretest.

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Learning Activity Package

Student: _____

Date: _____

PERFORMANCE ACTIVITY: Personal Safety

OBJECTIVES:

Recognize and wear appropriate clothing and protective devices that provide most desirable security from injury.

Recognize and use procedures for lifting and handling materials and equipment that insures greatest protection to the person.

EVALUATION PROCEDURE:

80% of the questions related to this LAP answered correctly on the unit test.

RESOURCES:

Shop Safety, A Self Instructional Program, Westinghouse Learning Corporation.

PROCEDURE:

1. Using Shop Safety, A Self Instructional Program, do the following assignments:
   a. Read and study carefully the information under the title "Instructions to the Trainee," pages 1-28.
   b. Read the introductory material.
   c. Complete section I entitled "Personal Safety." Use the method of study described under the title "Instructions to the Trainee."
2. When you have completed this section, proceed to the next assignment.

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Glasgow AFB, Montana 59231

Learning Activity Package

Student: _____

Date: _____

PERFORMANCE ACTIVITY: Safety in the Work Environment

OBJECTIVES:

Recognize the procedures and techniques that keep the work area at a low level of risk to persons.

Identify equipment, guards and markings that protect or alert persons to hazards.

EVALUATION PROCEDURE:

80% of the questions answered correctly on the unit test.

RESOURCES:

Shop Safety, A Self Instructional Program, Westinghouse Learning Corporation.

PROCEDURE:

1. Following the method of study described in the unit entitled "Instructions to the Trainee" in the booklet Shop Safety, complete the booklet from pages 31-61.

2. When you have completed this booklet, you should obtain the post test for the booklet.

3. Take the unit post test and have your instructor evaluate the test.

   If your score is less than 80%, proceed as directed by the instructor.

   If your score is greater than 80%, you will have successfully completed this unit. Then, proceed to the next assignment.

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Learning Experience Guide

UNIT: HAND TOOLS

RATIONALE:

In order to accomplish any work effectively, man must use hand tools. This unit will provide the knowledge needed to identify and use hand tools safely and properly.

PREREQUISITES:

None

OBJECTIVES:

Identify the hand tools and recognize their functions.

Identify the procedures for inspecting, cleaning and storing hand tools.

RESOURCES:

Hand Tools, A Self Instructional Program. Westinghouse Learning Corporation, 1970.

GENERAL INSTRUCTIONS:

This Unit consists of three Learning Activity Packages (LAPs). Each LAP will provide specific information for completion of a learning activity.

The general procedure for this Unit is as follows:

(1) Take the unit achievement test and score it. (See unit LEG "Evaluation Procedure")

(2) If the achievement test is satisfactorily completed, proceed to the next assigned unit in this course and step (1).

If the test is not satisfactorily completed, proceed to step (3).

(3) Begin and complete the first assigned LAP in the unit.

(4) Proceed to the next assigned LAP in the unit.

(5) Complete all required LAPs for the unit by following steps (3) through (4) until all LAPs for the unit are completed.

Principal Author(s):

R. Arneson/L. Leland

GENERAL INSTRUCTIONS: continued

(6) Take the achievement test for the unit. (See unit LEG "Evaluation Procedure")

PERFORMANCE ACTIVITIES:

.01 Wrench-Type Tools
.02 Hammers
.03 Cutting Tools

EVALUATION PROCEDURE:

The student validates this unit by either pretesting or post testing. An Achievement Test" for this unit is to be taken when pretesting or post testing.

The achievement test is a written test. Successful completion is answering at least 80% of the items correctly.

All during the "Plumber" Program, you will be evaluated on the proper and safe use of hand tools.

FOLLOW-THROUGH:

Remember that it is essential to use hand tools properly and safely.

Proceed to the pretest for the unit.

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Learning Activity Package

Student: _____

Date: _____

PERFORMANCE ACTIVITY: Wrench-Type Tools

OBJECTIVES:

Identify the following wrench-type tools from pictures and descriptions:

Slotted Screwdriver	Open-end Wrench	Pipe Wrench
Phillips Screwdriver	Box Wrench	Combination Pliers
Allen Wrench	Socket Wrench	Water Pump Pliers

Identify the procedures for determining the condition, the proper use, cleaning and storage of the above tools.

EVALUATION PROCEDURE:

80% of the test items related to this LAP on a unit test.

RESOURCES:

Hand Tools, A Self Instructional Program, Westinghouse Learning Corporation.

PROCEDURE:

1. Review carefully the information under the title "Instructions to Trainee" in Hand Tools, A Self Instructional Program. This section will explain how to use the booklet. If you have any questions after reading the instructions, see your instructor.

2. Complete the information in the booklet from pages 1-24. Follow the instructions carefully that are listed in the booklet.

3. When you have completed the activities listed in the booklet, review pages 1-24 if you feel it is necessary.

4. Proceed to the next assigned LAP.

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Learning Activity Package

Student: _____

Date: _____

PERFORMANCE ACTIVITY: Hammers

OBJECTIVES:

Identify the following hammers from pictures and descriptions:

Ball peen hammer

Soft-face hammer

Identify procedures for determining the condition, the proper use, cleaning and storage of the above tools.

EVALUATION PROCEDURE:

Correction answer 80% of the questions keyed to this LAP on a unit test.

RESOURCES:

Hand Tools, A Self Instruction Program, Westinghouse Learning Corporation.

PROCEDURE:

1. Carefully complete the activities listed in the booklet Hand Tools on pages 25-27.
2. Take the review test found on pages 28-35 of the booklet Hand Tools.

   NOTE: The review test covers the information found in both this LAP package and the LAP package on Wrench-Type Tools.
3. Check your answers with the answer key.

   If you score higher than 80%, proceed to the next assignment.

   If your score is less than 80% correct, proceed as directed by the instructor.

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Learning Activity Package

Student: _____

Date: _____

PERFORMANCE ACTIVITY: Cutting Tools

OBJECTIVES:

Identify the following cutting tools from pictures and descriptions:

Hacksaw	Drill bits	Side cutting pliers	Screw extractor
Hand file	Reamer	Long nose pliers	Pin punch
Drill	Tap and die	Jack knife	Tin snips

Identify procedures for determining the condition, the proper use, cleaning and storage of the above tools.

EVALUATION PROCEDURE:

Correctly answer 80% of the test items related to this LAP on a unit test.

RESOURCES:

Hand Tools, A Self Instruction Program, Westinghouse Learning Corporation.

PROCEDURE:

1. Take the prescriptive test on "Cutting Tools," page 37 of the booklet Hand Tools. When you complete the test, check your answers.

   If your answers are all correct, take the review test on pages 74-76. Then, proceed according to the directions in the book.

2. If your test answers are not all correct, proceed according to the directions in the booklet.

3. When you have completed the activities in the booklet from pages 36-73, take the review test.

   Check your answers after completing the test. Then, follow the directions on page 78.

4. Take the unit test. If your score is better than 80% correct, proceed to take the unit pretest for "Basic Measuring Instruments."

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Learning Experience Guide

UNIT: MEASUREMENT

RATIONALE:

Accurate measurement is an essential part of any layout and assembly process. This unit will help you develop the skills needed to measure properly and accurately.

PREREQUISITES:

None

OBJECTIVES:

Discriminate between the need for precision and non-precision measuring instruments, select and use the appropriate instrument.

Apply the desired tolerance for the given measurement situation and instrument.

Identify the measuring instruments and recognize their proper use.

RESOURCES:

Basic Measuring Instruments, A Self Instructional Program. Westinghouse Learning Corporation, 1970.

GENERAL INSTRUCTIONS:

This Unit consists of three Learning Activity Packages (LAPs). Each LAP will provide specific information for completion of a learning activity.

The general procedure for this Unit is as follows:

(1) Take the unit achievement test and score it. (See unit LEG "Evaluation Procedure")

(2) If the achievement test is satisfactorily completed, proceed to the next assigned unit in this course and step (1).

If the test is not satisfactorily completed, proceed to step (3).

(3) Begin and complete the first assigned LAP in the unit.

Principal Author(s):

R. Arneson/L. Leland

GENERAL INSTRUCTIONS: continued

(4) Proceed to the next assigned LAP in the unit.

(5) Complete all required LAPs for the unit by following steps (3) through (4) until all LAPs for the unit are completed.

(6) Take the achievement test for the unit. (See unit LEG "Evaluation Procedure")

PERFORMANCE ACTIVITIES:

.01 Basic Measurement and Tolerance
.02 Non-Precision Instruments
.03 Precision Instruments

EVALUATION PROCEDURE:

The student validates this unit by either pretesting or post testing. An "Achievement Test" for this unit is to be taken when pretesting or post testing.

The achievement test is a written test. Successful completion is answering at least 80% of the items correctly.

FOLLOW-THROUGH:

When you have read this unit guide, take the unit pretest. Keep in mind that you will be expected to measure accurately and properly all during the "Plumber" Program.

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Mountain-Plains Education & Economic Development Program, Inc.
Glasgow AFB, Montana 59231

Learning Activity Package

Student: _____

Date: _____

PERFORMANCE ACTIVITY: Basic Measurement and Tolerance

OBJECTIVES:

Identify the two parts of all measurement; recognize and apply linear and angular measurements and define tolerance.

EVALUATION PROCEDURE:

Correctly answer 80% of the test items related to this LAP on a unit test.

RESOURCES:

Basic Measuring Instruments, A Self Instructional Program, Westinghouse Learning Corporation.

PROCEDURE:

1. Read the information under the title "Instructions to the Trainee" in Basic Measuring Instruments. This is found right in the beginning of the booklet.
2. Take the prescriptive test on page 3. Check your answers and proceed according to the directions on page 4.
3. When you have completed all the information in the booklet through page 18, take the review test. Proceed according to the directions on page 22 of the booklet.
4. When you have completed section one of the booklet proceed to the next LAP.

Principal Author(s): R. Arneson, L. Leland

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Mountain-Plains Education & Economic Development Program, Inc.
Glasgow AFB, Montana 59231

Learning Activity Package

Student: _____

Date: _____

PERFORMANCE ACTIVITY: Non-Precision Instruments

OBJECTIVES:

Identify the following non-precision measuring tools and procedures for their proper use:

Steel tape	Outside calipers	Combination square set	Drill gauge
Rule depth gauge	Inside calipers	Plumb bob	
Dividers	Protractor	Level	

EVALUATION PROCEDURE:

Answer correctly 80% of the items related to this LAP on a written test taken at the end of the unit.

RESOURCES:

Basic Measuring Instruments, A Self Instructional Program, Westinghouse Learning Corporation.

PROCEDURE:

1. Complete the prescriptive test on page 25 in Basic Measuring Instruments. Follow the directions on page 26 after checking your test answers.
2. Complete the activities in the booklet from pages 27-68.
3. Take the review test on pages 69-71. Check your answers and proceed according to the directions found on page 73.
4. Proceed to the next LAP.

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Learning Activity Package

Student: _____

Date: _____

PERFORMANCE ACTIVITY: Precision Instruments

OBJECTIVES:

Identify the following, most popular precision measuring instruments and the procedures for their proper use:

Micrometer caliper	Micrometer depth gauge	Steel square
Vernier caliper	Feeler gauges	Dial indicators

EVALUATION PROCEDURE:

Correctly answer 80% of the test items related to this LAP on a unit test.

RESOURCES:

Basic Measuring Instruments, A Self Instructional Program, Westinghouse Learning Corporation.

PROCEDURE:

1. Complete the prescriptive test on page 77 in Basic Measuring Instruments. Follow the directions on page 78 after checking your test answers.
2. Complete the activities in the booklet from page 79-118.
3. Take the review test on pages 119-124. Check your answers on pages 125-126 and follow the directions on page 126.
4. Take the unit test. If your score is better than 80% correct, proceed to the next assigned course.

   If your score is less than 80%, proceed as directed by the instructor.

Principal Author(s): R. Arneson, L. Leland